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EXAMINER	
SHERMAN, STEPHEN G	

ART UNIT	PAPER NUMBER
2629	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/20/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/20/2007.

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mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)
	10/620,455	LEE, YU-TUAN
	Examiner	Art Unit
	Stephen G. Sherman	2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Appeal Brief filed the 18 January 2007. Claims 1-28 are pending.

Response to Amendment

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

3. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art..
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-4, 7-16 and 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise (US 5,528,267) in view of Ikeda (US 5,642,134).

Regarding claim 1, Ise discloses a touch-control method of an LCD, which is to sense a touch point on an LCD screen of the LCD (Figure 16), the LCD comprising a substrate having a plurality of data lines (Figure 16, x1-xm) and a plurality of scan lines (Figure 16, y1-ym), the method comprising:

a first touch-position sensing step, which detects values of liquid crystal capacitances formed between the scan lines needed to be detected and a pen (Figure 8 shows that the capacitance is measured between the pen and the electrodes. Figure 17 shows that the first touch-position sensing step, labeled as "COORDINATE Y DETECTION MODE. Column 16, line 63 to column 17, line 28 explains that the row electrodes are scanned such that the capacitance between the pen and the electrodes can be detected.), respectively, and

detects a scan-line-direction touch position according to values of the liquid crystal capacitances formed between the scan lines needed to be detected and a pen

during idling time in-between writing periods (Figures 8 and 17 show that the scan-line-direction touch position is detected in a period of time when display is not being performed. The claimed "writing period" is the display period shown in Figure 17, and the coordinate scanning periods are the "idling" periods in between the display period, i.e. writing period.),

each of the scan lines turning on sequentially to write image data into the LCD screen in the writing periods (Column 16, lines 13-39 explain about the display mode, i.e. "writing period". Specifically, column 16, lines 36-39 and column 18, lines 15-23 state that the row electrodes are scanned in the display period.);

a charging step, which charges a voltage signal into each of the data lines needed to be detected after the scan-line-direction touch position is detected (Column 17, line 63 to column 18, line 14 explains that the column electrodes are scanned during the COORDINATE X DETECTION MODE shown in Figure 17, which takes place after the COORDINATE Y DETECTION MODE. Since the column lines are scanned with a voltage, this means that a voltage signal is charged into the column lines after the row electrodes are scanned.); and

a second touch-position sensing step, which detects values of liquid crystal capacitances formed between the data lines needed to be detected and a pen (Figure 8 shows that the capacitance is measured between the pen and the electrodes. Figure 17 shows that the second touch-position sensing step, labeled as "COORDINATE X DETECTION MODE. Column 17, line 63 to column 18, line 14 explains that the column

electrodes are scanned such that the capacitance between the pen and the electrodes can be detected.), respectively, and

detects a data-line-direction touch position according to the values of the liquid crystal capacitances formed between the data lines needed to be detected and the pen (Figures 8 and 17 show that a data-line-direction touch position is detected during the COORDINATE X DETECTION MODE) after the voltage signal is charged (Column 18, lines 37-62 explains that the coordinates are detected for the row and column directions to determine a touch point. Since the columns would need to be scanned in order to detect the position, the scanning pulses will need to be applied to the column lines before this detection. This means that the position of the touch point <u>cannot</u> be determined until <u>after</u> the voltages are charged into the lines.), wherein, the scan-line-direction touch position and the data-line touch position indicate a position of the touch point (Column 18, lines 37-62 explain that the detection circuits are used to take the detection signals and determine the x and y coordinates to provide the touch point on the screen.).

Ise fails to teach of an LCD comprising a counter electrode panel that is used to detect the capacitance between the counter electrode and the scan/data lines respectively to determine a touch.

Ikeda discloses an LCD comprising a counter electrode panel that is used to detect the capacitance between the counter electrode and the scan/data lines respectively to determine a touch (Figure 2 and column 2, line 64 to column 3, line 5. The examiner interprets that when an identifying scan pulse is sent to one of the supply

lines 51 and 52, which are the gate and source lines, that the capacitive coupling is measured between the counter electrode 54 and one of the lines 51 or 52.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made us the method of using the counter electrode and scan/data lines to detect touch as taught by Ikeda into the touch-display of Ise such that the capacitance would be measured between the counter electrode and each of the scan and data lines in order to alleviate the need for a tablet member which intervenes between a display and a finger which tends to cause a parallax so that the finger may be located at a position deviated from a position to be indicated on the display member.

Regarding claim 2, Ise and Ikeda disclose the method of claim 1.

Ise also discloses a method wherein when the scan-line-direction touch position is not detected in the first touch-position sensing step, the first touch-position sensing step is repeated (Figure 17. The examiner interprets that since the detection period is repeated ever frame, that if the touch position is not detected, the step would be repeated in the next frame.).

Regarding claim 3, Ise and Ikeda disclose the method of claim 1.

Ise also discloses a method wherein when the data-line-direction touch position is not detected in the second touch-position sensing step, the first touch-position sensing step is repeated (Figure 17. The examiner interprets that since the detection

period is repeated ever frame, that if the touch position is not detected, the step would be repeated in the next frame.).

Regarding claim 4, Ise and Ikeda disclose the method of claim 1.

Ise also discloses a method wherein the substrate is a TFT substrate (Figure 16 and Column 15, line 58 to column 16, line 8.).

Regarding claim 7, Ise and Ikeda disclose the method of claim 1.

Ise also discloses a method further comprising a comparing-value setting step, which sets at least one scan-line comparing value and at least one data-line comparing value (Column 18, lines 24-36.).

Regarding claim 8, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein when a liquid crystal capacitance formed between one of the scan lines and a pen is greater than the scan-line comparing value, the first-touch position sensing step determines the location of the scan line corresponding to the liquid crystal capacitance is the scan-line-direction touch position (Column 18, lines 24-36 explains that the detected signal Vs is compared to the reference voltage Vr and it is detected when Vs is greater than Vr and is at its peak and that the counting the number of clocks to determine the coordinate value would determine the touch position.).

Regarding claim 9, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein when a liquid crystal capacitance formed between one of the data lines and a pen is greater than the data-line comparing value, the second touch-position sensing step determines the location of the data line corresponding to the liquid crystal capacitance is the data-line-direction touch position (Column 18, lines 24-36 explains that the detected signal Vs is compared to the reference voltage Vr and it is detected when Vs is greater than Vr and is at its peak and that the counting the number of clocks to determine the coordinate value would determine the touch position.).

Regarding claim 10, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein the scan-line comparing value is equal to a predetermined value plus a minimum value of the liquid crystal capacitances formed between the data lines needed to be detected and the pen (Column 18, lines 24-36. The examiner interprets that it is inherent to set the value Vr to be equal to a predetermined value plus a minimum value of the liquid crystal capacitances formed between the scan lines and the counter electrode because by adding in this minimum value the comparing value can take into account the electrostatic coupling capacitance which exists between wiring lines and the electrode and thus a capacitance would only be detected when the LCD is touched.).

Regarding claim 11, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein the data-line comparing value is equal to a predetermined value plus a minimum value of the liquid crystal capacitances formed between the data lines needed to be detected and the pen (Column 18, lines 24-36. The examiner interprets that it is inherent to set the value Vr to be equal to a predetermined value plus a minimum value of the liquid crystal capacitances formed between the data lines and the counter electrode because by adding in this minimum value the comparing value can take into account the electrostatic coupling capacitance which exists between wiring lines and the electrode and thus a capacitance would only be detected when the LCD is touched.).

Regarding claim 12, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein the scan-line comparing value is equal to a predetermined value plus one of the values of the previously detected liquid crystal capacitances formed between the pen and the scan lines (Column 18, lines 24-36. The examiner interprets that it is inherent to set the value Vr to be equal to a predetermined value plus one of the values of the previously detected liquid crystal capacitances formed between the counter electrode panel and the scan lines because since the purpose is to find the scan line with the largest current flowing, or capacitance value, as indicated by the passage since the peak value of Vs is desired, that it would be inherent to compare the capacitances of previously detected lines together to determine the largest value, i.e. where the LCD has been touched.).

Regarding claim 13, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein the data-line comparing value is equal to a predetermined value plus one of the values of the previously detected liquid crystal capacitances formed between the pen and the data lines (Column 18, lines 24-36. The examiner interprets that it is inherent to set the value Vr to be equal to a predetermined value plus one of the values of the previously detected liquid crystal capacitances formed between the counter electrode panel and the data lines because since the purpose is to find the data line with the largest current flowing, or capacitance value, as indicated by the passage since the peak value of Vs is desired, that it would be inherent to compare the capacitances of previously detected lines together to determine the largest value, i.e. where the LCD has been touched.).

Regarding claim 14, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein the scan-line comparing value is equal to a predetermined value plus an average of at least two values of the liquid crystal capacitances formed between the scan lines needed to be detected and the finger (Column 18, lines 24-36. The examiner interprets that it is inherent to set the value Vr to be equal to a predetermined value plus an average of at least two values of the liquid crystal capacitances formed between the scan lines and the counter electrode because the purpose of the invention is to find the scan line with the largest current, or capacitance, as indicated by the passage since the peak value of Vs is desired, and by

taking an average value of at least two values of capacitances formed there would be less error in the detection of the position touched.).

Regarding claim 15, Ise and Ikeda disclose the method of claim 7.

Ise also discloses a method wherein the data-line comparing value is equal to a predetermined value plus an average of at least two values of the liquid crystal capacitances formed between the data lines needed to be detected and the finger (Column 18, lines 24-36. The examiner interprets that it is inherent to set the value Vr to be equal to a predetermined value plus an average of at least two values of the liquid crystal capacitances formed between the data lines and the counter electrode because the purpose of the invention is to find the data line with the largest current, or capacitance, as indicated by the passage since the peak value of Vs is desired, and by taking an average value of at least two values of capacitances formed there would be less error in the detection of the position touched.).

Regarding claim 16, Ise discloses an LCD (liquid crystal display) (Figure 16), which has a substrate having a plurality of data lines (Figure 16, X1-Xm) and a plurality of scan lines (Figure 16, Y1-Yn), comprising:

a first sensing circuit (Figure 16, ROW ELECTRODE DRIVER 202 and COORDINATE Y DETECTOR),

which respectively electrically connects to the scan lines needed to be detected, detects values of liquid crystal capacitances formed between the scan lines needed to

be detected and a pen (Figure 8 shows that the capacitance is measured between the pen and the electrodes. Figure 17 shows that the second touch-position sensing step, labeled as "COORDINATE X DETECTION MODE. Column 17, line 63 to column 18, line 14 explains that the column electrodes are scanned such that the capacitance between the pen and the electrodes can be detected.), and

detects a scan-line-direction touch position according to the values of the liquid crystal capacitances formed between the scan lines needed to be detected and the pen (Figures 8 and 17 show that the scan-line-direction touch position is detected in a period called COORDINATE Y DETECTION MODE.);

a timing control circuit (Figure 16, TIMING GENERATOR 204), which electrically connects to the first sensing circuit and controls the first sensing circuit to detect the liquid crystal capacitances formed between the scan lines needed to be detected and the pen during idling time in-between writing periods (Figures 8 and 17 show that the scan-line-direction touch position is detected in a period of time when display is not being performed. The claimed "writing period" is the display period shown in Figure 17, and the coordinate scanning periods are the "idling" periods in between the display period, i.e. writing period.),

each of the scan lines turning on sequentially to write image data into the LCD screen in the writing periods (Column 16, lines 13-39 explain about the display mode, i.e. "writing period". Specifically, column 16, lines 36-39 and column 18, lines 15-23 state that the row electrodes are scanned in the display period.);

a voltage-signal generating circuit (Figure 16, items 223 and 224 and VD+ and VD-), which electrically connects to the timing control circuit and each of the data lines, wherein the timing control circuit controls the voltage-signal generating circuit to charge a voltage signal into each of the data lines needed to be detected after the scan-line-direction touch position is detected (Column 17, line 63 to column 18, line 14 explains that the column electrodes are scanned during the COORDINATE X DETECTION MODE shown in Figure 17, which takes place after the COORDINATE Y DETECTION MODE. Since the column lines are scanned with a voltage, this means that a voltage signal is charged into the column lines after the row electrodes are scanned.); and

a second sensing circuit (Figure 16, COLUMN ELECTRODE DRIVER 203 and COORDINATE X DETECTOR), which respectively electrically connects to each of the data lines needed to be detected, detects values of liquid crystal capacitances formed between the data lines needed to be detected and the pen (Figure 8 shows that the capacitance is measured between the pen and the electrodes. Figure 17 shows that the second touch-position sensing step, labeled as "COORDINATE X DETECTION MODE. Column 17, line 63 to column 18, line 14 explains that the column electrodes are scanned such that the capacitance between the pen and the electrodes can be detected.), and

detects a data-line-direction touch position according to the values of the liquid crystal capacitances formed between the data lines needed to be detected and the pen (Figures 8 and 17 show that a data-line-direction touch position is detected during the COORDINATE X DETECTION MODE) after the voltage signal is charged (Column 18,

lines 37-62 explains that the coordinates are detected for the row and column directions to determine a touch point. Since the columns would need to be scanned in order to detect the position, the scanning pulses will need to be applied to the column lines before this detection. This means that the position of the touch point cannot be determined until after the voltages are charged into the lines.).

Ise fails to teach of an LCD comprising a counter electrode panel that is used to detect the capacitance between the counter electrode and the scan/data lines respectively to determine a touch.

Ikeda discloses an LCD comprising a counter electrode panel that is used to detect the capacitance between the counter electrode and the scan/data lines respectively to determine a touch (Figure 2 and column 2, line 64 to column 3, line 5. The examiner interprets that when an identifying scan pulse is sent to one of the supply lines 51 and 52, which are the gate and source lines, that the capacitive coupling is measured between the counter electrode 54 and one of the lines 51 or 52.).

Therefore it would have been obvious to "one of ordinary skill" in the art at the time the invention was made us the method of using the counter electrode and scan/data lines to detect touch as taught by Ikeda into the touch-display of Ise such that the capacitance would be measured between the counter electrode and each of the scan and data lines in order to alleviate the need for a tablet member which intervenes between a display and a finger which tends to cause a parallax so that the finger may be located at a position deviated from a position to be indicated on the display member.

Regarding claim 19, this claim is rejected under the same rationale as claim 4.

Regarding claim 20, Ise and Ikeda disclose the LCD of claim 16.

Ise also discloses an LCD further comprising:

a comparing-value setting circuit (Figure 16, comparator 207), which respectively electrically connects to the first sensing circuit and the second sensing circuit, and sets at least one scan-line comparing value to be input to the first sensing circuit and at least one data-line comparing value to be input to the second sensing circuit (Column 18, lines 24-36, where as shown the values are input into the COORDINATE X DETECTOR 211 and the COORDINATE Y DETECTOR 210.).

Regarding claim 21, this claim is rejected under the same rationale as claim 8.

Regarding claim 22, this claim is rejected under the same rationale as claim 9.

Regarding claim 23, this claim is rejected under the same rationale as claim 10.

Regarding claim 24, this claim is rejected under the same rationale as claim 11.

Regarding claim 25, this claim is rejected under the same rationale as claim 12.

Regarding claim 26, this claim is rejected under the same rationale as claim 13.

Regarding claim 27, this claim is rejected under the same rationale as claim 14.

Regarding claim 28, this claim is rejected under the same rationale as claim 15.

7. Claims 5-6 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise (US 5,528,267) in view of Ikeda (US 5,642,134) and further in view of Knapp (US 5,270,711)

Regarding claims 5 and 6, Ise and Ikeda disclose the method of claim 1.

Ise and Ikeda fail to teach a method wherein when detecting the liquid crystal capacitances formed between the scan/data lines and the counter electrode panel, at least one of the scan/data lines is skipped in the first/second touch-position sensing step.

Knapp discloses a method wherein when detecting the touching of the panel, at least one of the array elements is skipped (Column 2, lines 3-19. The examiner interprets that since the elements of those whose states are indicative of having been touched and their locations being ascertained means that the elements that have not been touched would therefore not be sensed and in a sense would be "skipped.").

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the method of skipping some of the scanning lines

as taught by Knapp with the method taught by the combination of Ise and Ikeda in order to provide a touch sensor array capable of high resolution.

Regarding claim 17, this claim is rejected under the same rationale as claim 5.

Regarding claim 18, this claim is rejected under the same rationale as claim 6.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Eriksson (US 4,910,504) discloses a touch controlled display in which the capacitance is sensed between an electrode and a counter electrode to determine a touch position.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SS

11 April 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

Amr Ahmed Awad